

The Cost of Treating Immune Thrombocytopenic Purpura Using Intravenous Rh Immune Globulin Versus Intravenous Immune Globulin

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Multiple factors, including efficacy, toxicity and cost, may influence the decision to treat immune thrombocytopenic purpura (ITP) with intravenous immune globulin (IVIG) or intravenous Rho (D) immune globulin (IV RhIG). We conducted a survey of 50 hospitals in 31 states to determine the costs for treating ITP using conventional doses for IVIG or IV RhIG, based on package insert recommendations. The average cost for a dose of IVIG (\$2,771) was 71.7% (\$1,157) more than that for a dose of IV RhIG (\$1,614). In the absence of clearly defined differences in clinical outcomes when treating ITP with IVIG or IV RhIG, the difference in cost may be an important factor in selecting the treatment. *Am J. Hematol.* 63:156–158, 2000. © 2000 Wiley-Liss, Inc.

Key words: immune thrombocytopenic purpura; Rh immune globulin; anti-D, intravenous; immune globulin, intravenous

INTRODUCTION

Among the factors that may influence a decision to treat immune thrombocytopenic purpura (ITP) with intravenous Rho (D) immune globulin (IV RhIG) or intravenous immune globulin (IVIG) is the cost of the product. The following article describes a prospective multicenter survey that was conducted to determine the costs of IV RhIG or IVIG in hospitals in the United States.

MATERIALS AND METHODS

Study Design

General guidelines for the study were developed by investigators at Georgetown University Medical Center (SGS, SN). The Dominion Group, an independent health-care research organization, conducted the survey and obtained data on hospitals' purchase prices ("cost") for various brands and vial sizes of IVIG or IV RhIG. A self-administered survey instrument was developed and distributed to pre-recruited pharmacists in 50 hospitals, including community non-teaching (CNT), community teaching (CT), and university-affiliated (UNIV) hospitals. An honorarium was offered to the pharmacists for

collecting and reporting the requested information via fax.

Basis for Comparisons

From the survey data, we calculated the hospitals' costs for a single dose of IVIG (1 gm/kg) or IV RhIG (50 µg/kg) for a 70-kg patient, based on dosing recommendations for ITP in manufacturers' package inserts. We also calculated the cost for a dose of IV RhIG using the dose of 75 µg/kg since this dose, although "off-label," is commonly used in our hospital and others based on preliminary evidence of increased efficacy [1]. The costs for products were calculated for filling the dose using the most economical combination of vial sizes and contract prices for each product. Costs for pooling the contents of multiple vials and infusing IVIG or injecting IV RhIG were not included.

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TABLE I. Average Cost (US \$) Per Dose of IVIG (1 g/kg) or IV RhIG (50 µg/kg) for Treating a 70-kg Person With ITP

Product	Number of beds in hospital				Type of hospital*			Average for all hospitals
	<150	150–299	300–499	>500	CNT	CT	UNIV	
IV RhIG	None	1589	1502	1859	1506	1561	1887	1614
IVIG	2486	2862	2877	2757	2681	2974	2620	2771

*Community non-teaching (CNT); community teaching (CT); university-affiliated (UNIV).

RESULTS

Fifty hospitals in 31 states provided data in May 1999. Participating hospitals used at least one of the eight brands of IVIG that were marketed in the United States at that time, including Gamimune N (Bayer Corporation, West Haven, CT), Gammagard S/D (Baxter Healthcare Corporation, Glendale, CA), Gammar-P I.V. (Centeon, King of Prussia, PA), Iveegam (Immuno, Rochester, MI), Panglobulin Intravenous (American Red Cross, Arlington, VA), Polygam S/D (American Red Cross), Sando-globulin (Novartis Consumer Health, Summit, NJ), and Venoglobulin-S (Alpha Therapeutic Corporation, Los Angeles, CA). Eighteen (36%) of the hospitals purchased IV RhIG (WinRho SDF, NABI, Boca Raton, FL).

The average cost for a dose of IVIG (\$2,771) was 71.7% more (\$1,157) than that for IV RhIG (\$1,614) (Table I). The average cost for IVIG (1 g/kg) was 17.3% (\$410) more than the average cost of IV RhIG at the dose of 75 µg/kg. Typically, but not always, the manufacturers' contract prices to hospitals were lower than the lowest off-contract price available to hospitals. Forty-eight of the hospitals were affiliated with a buying group; two hospitals were unaffiliated.

DISCUSSION

The principal factors that influence a decision to select IVIG or IV RhIG for treating ITP are efficacy of the product for increasing the platelet count, frequency, and severity of adverse side effects, reliability of supply, and cost. Also, IV RhIG is not indicated for the treatment of Rh(D)-negative persons and, therefore, it is not an appropriate treatment for approximately 15% of random patients whose blood group phenotype is Rh(D)-negative.

Although IV RhIG has been approved by the FDA for the management of selected patients with ITP since 1995 [2], we are not aware of a randomized, controlled clinical trial directly comparing the efficacy of conventional doses of IVIG (1 g/kg) and IV RhIG (50 µg/kg) for the management of ITP. One randomized trial of IVIG (1 g/kg on 2 consecutive days), IV RhIG (25 µg/kg on 2 consecutive days), and prednisone (4 mg/kg per day) in childhood acute ITP found more rapid platelet count response rates for IVIG [3]. However, this dose of IVIG is

double that typically used, and, therefore, the cost for IVIG is two times that used for comparisons in the present study. Authors of two reports on this subject concluded that patients with chronic ITP who were treated with IV RhIG had platelet count responses that were comparable to those treated with IVIG [4,5]. In the absence of definitive data on clinical outcomes or an up-to-date evidence-based practice guideline that addresses the selection of IVIG versus IV RhIG, decisions to treat ITP using IV RhIG, IVIG or other medications rely on indirect comparisons of efficacy based on reports of single-medication clinical trials [6–9]. Additional factors include the frequency and severity of adverse side effects, the convenience of injecting RhIG or infusing IVIG, the availability of products during periods of shortages, and cost of the product.

The results of this prospective 31-state, multicenter study indicate that in May 1999 hospitals in the United States paid an average of 71.7% (\$1,157) more per dose for IVIG (1 g/kg) than for IV RhIG (50 µg/kg) for a 70-kg person. This figure is comparable to the cost savings of \$1,553 per treatment episode reported for a retrospective 5-hospital study reported in 1998 [10]. Since the treatment of ITP typically requires repeated doses at 3–4 week intervals for weeks to months, the total difference in cost is calculated by multiplying the number of treatments by the difference in cost per dose. In the absence of data demonstrating a significantly improved clinical outcome for either treatment, the costs for these products may be an important factor in selecting a treatment program.

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